

In the Claims:

Please amend the claims as follows:

1. (Currently amended) A bipolar junction transistor, comprising:
  - an intrinsic collector region of first conductivity type in a semiconductor substrate;
  - a trench in said substrate, adjacent said intrinsic collector region;
  - 5 a base electrode of second conductivity type in the semiconductor substrate, said base electrode comprising a trench-based electrode portion that extends in said trench and a lateral base electrode extension that extends outside said trench;
  - 10 an extrinsic base region of second conductivity type that is self-aligned and electrically connected to said lateral base electrode extension and forms a P-N rectifying junction with said intrinsic collector region;
  - 15 an intrinsic base region of second conductivity type that is self-aligned to said lateral base electrode extension, has a lower second conductivity type doping concentration therein relative to said extrinsic base region and forms a P-N rectifying junction with said intrinsic collector region;
  - 20 a trench insulating layer that lines a bottom and sidewalls of said trench and prevents direct electrical contact between the trench-based electrode portion of said base electrode and said extrinsic base region by blocking charge transfer across the sidewalls of said trench; and

Claims 2-4 (Canceled).

5. (Previously presented) The transistor of Claim 1, wherein said emitter region is self-aligned to a sidewall of the lateral base electrode extension.

6. (Previously presented) The transistor of Claim 1, wherein said trench is ring-shaped; and wherein said extrinsic base region is ring-shaped.

7. (Previously presented) The transistor of Claim 5, further comprising:  
an electrically insulating sidewall spacer on the sidewall of the lateral base electrode extension; and  
an emitter electrode of first conductivity type on the surface of said substrate and on said electrically insulating sidewall spacer.  
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8. (Original) The transistor of Claim 7, further comprising a buried extrinsic collector region of first conductivity type in said substrate, said buried extrinsic collector region forming a non-rectifying junction with said intrinsic collector region.  
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9. (Original) The transistor of Claim 8, wherein an inner sidewall of said trench defines an intrinsic collector region mesa that extends between said buried extrinsic collector region and the surface of said substrate.  
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Claims 10-26 (Canceled).

- 20            27. (Currently amended) A bipolar junction transistor, comprising:  
an electrically insulating layer on a surface of a semiconductor substrate  
having an intrinsic collector region of first conductivity type therein, said  
electrically insulating layer comprising a composite of a first electrically insulating  
material layer and a second electrically insulating material layer on the first  
electrically insulating material layer and having a lateral recess therein that  
extends along an undersurface of the second electrically insulating material  
layer;  
a trench that extends into the surface of the semiconductor substrate and  
into the intrinsic collector region and is self-aligned to an opening in said  
electrically insulating layer;  
30            a base electrode of second conductivity type having a first portion that  
extends in said trench and a second portion that extends into the lateral recess  
within said electrically insulating layer;  
a base region of second conductivity type that is self-aligned and  
electrically connected to the second portion of said base electrode extending into  
35            the lateral recess and forms a P-N rectifying junction with said intrinsic collector  
region;  
a trench insulating layer that lines a bottom and sidewalls of said trench  
and extends between the first portion of said base electrode and said base  
region so that any direct electrical connection between charge transfer across  
40            the sidewalls of said trench from the first portion of said base electrode to [[and]]  
said base region is blocked; and  
an emitter region of first conductivity type that forms a P-N rectifying  
junction with said base region.

45            28. (Canceled).